UNITED STATES PATENT AND TRADEMARK OFFICE

NOTICE OF ALLOWANCE AND FEE(S) DUE

22850   7590   05/05/2008

OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER
AKHAVANNIK, HADI

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 05/05/2008

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,675	07/14/2003	Maryellen L. Giger	239738US20	4119

TITLE OF INVENTION: AUTOMATED METHOD AND SYSTEM FOR COMPUTERIZED IMAGE ANALYSIS FOR PROGNOSIS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$300	$0	$1740	08/05/2008

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: <u>Mail</u>

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Alexandria, Virginia 22313-1450

or <u>Fax</u> (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

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Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

_____ (Depositor's name)

_____ (Signature)

_____ (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,675	07/14/2003	Maryellen L. Giger	239738US20	4119

TITLE OF INVENTION: AUTOMATED METHOD AND SYSTEM FOR COMPUTERIZED IMAGE ANALYSIS FOR PROGNOSIS

APPLN. TYPE	SMALL ENTITY	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	$1440	$300	$0	$1740	08/05/2008

EXAMINER	ART UNIT	CLASS-SUBCLASS
AKHAVANNIK, HADI	2624	382-132000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE   (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent) : ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (**Please first reapply any previously paid issue fee shown above**)

☐ A check is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27.   ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____   Date _____

Typed or printed name _____   Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.   OMB 0651-0033   U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,675	07/14/2003	Maryellen L. Giger	239738US20	4119

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22850	7590	05/05/2008	AKHAVANNIK, HADI

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ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 05/05/2008

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 699 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 699 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

PTOL-85 (Rev. 08/07) Approved for use through 08/31/2010.

	Application No.	Applicant(s)
Notice of Allowability	10/617,675	GIGER ET AL.
	Examiner	**Art Unit**	
	HADI AKHAVANNIK	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *4/18/08*.

2. ☒ The allowed claim(s) is/are *1-13,15-17 and 20-51*.

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a) ☐ All   b) ☐ Some*   c) ☐ None   of the:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____ .

   Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
   THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

   (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of
      Paper No./Mail Date _____ .

   Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☐ Information Disclosure Statements (PTO/SB/08),
   Paper No./Mail Date _____

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413),
   Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☒ Examiner's Statement of Reasons for Allowance

9. ☐ Other _____ .

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes

and/or additions be unacceptable to applicant, an amendment may be filed as provided

by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be

submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Kurt

Berger (51461) on 4/18/08.

The application has been amended as follows:

1. (Previously Presented) A method of processing medical image data to determine a prognosis of recovery, comprising:

obtaining segmented image data of a portion of the medical image data corresponding to an abnormality;

extracting at least one abnormality feature from the segmented image data corresponding to the abnormality; and

determining the prognosis of recovery based on the extracted at least one abnormality feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject, wherein said determining step includes

applying the at least one abnormality feature to a classifier trained in relation to said at least one abnormality feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

2. (Previously Presented) The method of claim 1, further comprising:

obtaining segmented image data of a portion of the medical image data corresponding to a parenchymal region; and

extracting at least one parenchymal feature from the segmented image data corresponding to the parenchyma region,

wherein the determining step comprises determining the prognosis of recovery based additionally on the extracted at least one parenchymal feature.

3. (Original) The method of claim 2, wherein the step of extracting the at least one parenchyma feature comprises:

determining at least one of skewness, coarseness, and contrast of the segmented image data corresponding to the parenchymal region.

4. (Original) The method of claim 2, wherein the step of obtaining the segmented image data of the portion of the medical image data corresponding to the parenchymal region comprises:

obtaining mammographic image data corresponding to a region distinct from the abnormality.

5. (Original) The method of claim 1, wherein the step of obtaining the segmented image data corresponding to the abnormality comprises:

obtaining an indication of the location of the abnormality in the medical image data; and

performing region growing from the obtained location.

6. (Original) The method of claim 1, wherein the obtaining step comprises:

obtaining mammographic image data.

7. (Original) The method of claim 1, wherein the extracting step comprises:

determining a radial gradient index.

8. (Original) The method of claim 1, wherein the extracting step comprises:

determining at least one of circularity and density of the abnormality.

9. (Original) The method of claim 1, wherein the extracting step comprises:

determining at least one of average gray level, contrast, and a texture measure of the abnormality.

10. (Original) The method of claim 1, wherein the extracting step comprises:

determining a spiculation measure.

11. (Original) The method of claim 10, wherein the step of determining the spiculation measure comprises:

obtaining a cumulative edge gradient histogram of the segmented image data; and

determining the spiculation measure based on the obtained cumulative edge gradient histogram.

12. (Original) The method of claim 1, wherein the determining step comprises:

applying the extracted at least one abnormality feature to an artificial neural network (ANN) that classifies the abnormality at an output of the ANN.

13. (Original) The method of claim 1, wherein the determining step comprises:

applying the extracted at least one abnormality feature to a linear discriminant that classifies the abnormality at an output of the linear discriminant.

14. (Canceled)

15. (Original) The method of claim 2, wherein the step of determining the prognosis based on the extracted at least one parenchymal feature comprises:

applying the extracted at least one parenchymal feature to an artificial neural network (ANN) that determines a numerical indication of the prognosis at an output of the ANN.

16. (Original) The method of claim 2, wherein the determining step comprises:

applying the extracted at least one parenchymal feature to a linear discriminant that determines a numerical indication of the prognosis at an output of the linear discriminant.

17. (Previously Presented) A method of processing medical image data to determine a prognosis of recovery, comprising:

obtaining segmented image data of a portion of the medical image data corresponding to a parenchymal region;

extracting at least one parenchymal feature from the segmented image data corresponding to the parenchymal region; and

determining the prognosis of recovery based on the extracted at least one parenchymal feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject, wherein said determining step includes

applying the at least one parenchymal feature to a classifier trained in relation to said at least one parenchymal feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

18. (Cancelled)

19. (Cancelled)

20. (New) A computer-readable medium storing computer program instructions which, when executed by a computer, cause the computer to process medical image data to determine a prognosis of recovery by performing the steps of:

obtaining segmented image data of a portion of the medical image data corresponding to an abnormality;

extracting at least one abnormality feature from the segmented image data corresponding to the abnormality; and

determining the prognosis of recovery based on the extracted at least one abnormality feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject, wherein said determining step includes

applying the at least one abnormality feature to a classifier trained in relation to said at least one abnormality feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

21. (New) The computer-readable medium of claim 20, wherein the computer program further causes the computer to perform the steps of:

obtaining segmented image data of a portion of the medical image data corresponding to a parenchymal region; and

extracting at least one parenchymal feature from the segmented image data corresponding to the parenchyma region,

wherein the determining step comprises determining the prognosis of recovery based additionally on the extracted at least one parenchymal feature.

22. (New) The computer-readable medium of claim 21, wherein the step of extracting the at least one parenchyma feature comprises:

determining at least one of skewness, coarseness, and contrast of the segmented image data corresponding to the parenchymal region.

23. (New) The computer-readable medium of claim 21, wherein the step of obtaining the segmented image data of the portion of the medical image data corresponding to the parenchymal region comprises:

obtaining mammographic image data corresponding to a region distinct from the abnormality.

24. (New) The computer-readable medium of claim 20, wherein the step of obtaining the segmented image data corresponding to the abnormality comprises:

obtaining an indication of the location of the abnormality in the medical image data; and

performing region growing from the obtained location.

25. (New) The computer-readable medium of claim 20, wherein the obtaining step comprises:

obtaining mammographic image data.

26. (New) The computer-readable medium of claim 20, wherein the extracting step comprises:

determining a radial gradient index.

27. (New) The computer-readable medium of claim 20, wherein the extracting step comprises:

determining at least one of circularity and density of the abnormality.

28. (New) The computer-readable medium of claim 20, wherein the extracting step comprises:

determining at least one of average gray level, contrast, and a texture measure of the abnormality.

29. (New) The computer-readable medium of claim 20, wherein the extracting step comprises:

determining a spiculation measure.

30. (New) The computer-readable medium of claim 29, wherein the step of determining the spiculation measure comprises:

obtaining a cumulative edge gradient histogram of the segmented image data; and

determining the spiculation measure based on the obtained cumulative edge gradient histogram.

31. (New) The computer-readable medium of claim 20, wherein the determining step comprises:

applying the extracted at least one abnormality feature to an artificial neural network (ANN) that classifies the abnormality at an output of the ANN.

32. (New) The computer-readable medium of claim 20, wherein the determining step comprises:

applying the extracted at least one abnormality feature to a linear discriminant that classifies the abnormality at an output of the linear discriminant.

33. (New) The computer-readable medium of claim 21, wherein the step of determining the prognosis based on the extracted at least one parenchymal feature comprises:

applying the extracted at least one parenchymal feature to an artificial neural network (ANN) that determines a numerical indication of the prognosis at an output of the ANN.

34. (New) The computer-readable medium of claim 21, wherein the determining step comprises:

applying the extracted at least one parenchymal feature to a linear discriminant that determines a numerical indication of the prognosis at an output of the linear discriminant.

35. (New) A computer-readable medium storing computer program instructions which, when executed by a computer, cause the computer to process medical image data to determine a prognosis of recovery by performing the steps of:

obtaining segmented image data of a portion of the medical image data corresponding to a parenchymal region;

extracting at least one parenchymal feature from the segmented image data corresponding to the parenchymal region; and

determining the prognosis of recovery based on the extracted at least one parenchymal feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject, wherein said determining step includes

applying the at least one parenchymal feature to a classifier trained in relation to said at least one parenchymal feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

36. (New) A system for processing medical image data to determine a prognosis of recovery, comprising:

an image acquisition unit configured to obtain segmented image data of a portion of the medical image data corresponding to an abnormality; and

a processor configured to extract at least one abnormality feature from the segmented image data corresponding to the abnormality, and to determine the prognosis of recovery based on the extracted at least one abnormality feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject, wherein said processor is configured to apply the at least one abnormality feature to a classifier trained in relation to said at least one abnormality feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

37. (New) The system of claim 36, wherein:

the image acquisition unit is configured to obtain segmented image data of a portion of the medical image data corresponding to a parenchymal region; and

the processor is configured to extract at least one parenchymal feature from the segmented image data corresponding to the parenchyma region, and to determine the prognosis of recovery based additionally on the extracted at least one parenchymal feature.

38. (New) The system of claim 37, wherein the processor is configured to determine at least one of skewness, coarseness, and contrast of the segmented image data corresponding to the parenchymal region.

39. (New) The system of claim 37, wherein the image acquisition unit is configured to obtain mammographic image data corresponding to a region distinct from the abnormality.

40. (New) The system of claim 36, wherein:

the image acquisition unit is configured to obtain an indication of the location of the abnormality in the medical image data; and

the processor is configured to perform region growing from the obtained location.

41. (New) The system of claim 36, wherein the image acquisition unit is configured to obtain mammographic image data.

42. (New) The system of claim 36, wherein the processor is configured to determine a radial gradient index.

43. (New) The system of claim 36, wherein the processor is configured to determine at least one of circularity and density of the abnormality.

44. (New) The system of claim 36, wherein the processor is configured to determine at least one of average gray level, contrast, and a texture measure of the abnormality.

45. (New) The system of claim 36, wherein the processor is configured to determine a spiculation measure.

46. (New) The system of claim 45, wherein the processor is configured to obtain a cumulative edge gradient histogram of the segmented image data, and to determine the spiculation measure based on the obtained cumulative edge gradient histogram.

47. (New) The system of claim 36, wherein the processor is configured to apply the extracted at least one abnormality feature to an artificial neural network (ANN) that classifies the abnormality at an output of the ANN.

48. (New) The system of claim 36, wherein the processor is configured to apply the extracted at least one abnormality feature to a linear discriminant that classifies the abnormality at an output of the linear discriminant.

49. (New) The system of claim 37, wherein the processor is configured to apply the extracted at least one parenchymal feature to an artificial neural network (ANN) that determines a numerical indication of the prognosis at an output of the ANN.

50. (New) The system of claim 37, wherein the processor is configured to apply the extracted at least one parenchymal feature to a linear discriminant that determines a numerical indication of the prognosis at an output of the linear discriminant.

51. (New) A system for processing medical image data to determine a prognosis of recovery, comprising:

an image acquisition unit configured to obtain segmented image data of a portion of the medical image data corresponding to a parenchymal region; and

a processor configured to extract at least one parenchymal feature from the segmented image data corresponding to the parenchymal region, and to determine the prognosis of recovery based on the extracted at least one parenchymal feature, wherein the prognosis of recovery includes an indication of the likelihood of survival of a subject,

wherein the processor is configured to apply the at least one parenchymal feature to a classifier trained in relation to said at least one parenchymal feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of

lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

The independent claims disclose in part to a classifier trained in relation to said at least one abnormality feature obtained from at least one set of previously obtained medical data including medical image data and a set of truth indicators, the set of truth indicators including at least one of lymph node involvement, presence of metastatic disease, and presence of local recurrence, wherein said classifier is trained by comparing at least one of said truth indicators to a numerical indication of prognosis output by said classifier.

The above features, as explicitly recited, and in combination with the other elements of the claim are neither disclosed nor suggested by the nearest prior art of the record.

Prior arts Giger, Ohno-Machado, Huo, and Ravdin do not disclose the specifics of training the classifier by comparing the truth indicators to a numerical indication of prognosis output by the classifier. This feature is in each independent claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HADI AKHAVANNIK whose telephone number is (571)272-8622. The examiner can normally be reached on 10:30-7:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HA
4/18/08

/Bhavesh M Mehta/

Supervisory Patent Examiner, Art Unit 2624